
UNIVERSITY OF IOWA STUDIES

STUDIES IN CHILD WELFARE

VOLUME I

NUMBER 2

A SURVEY OF MUSICAL TALENT IN THE PUBLIC SCHOOLS

by

CARL E. SEASHORE

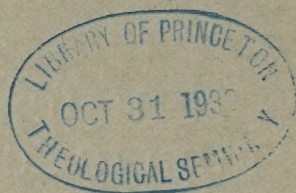
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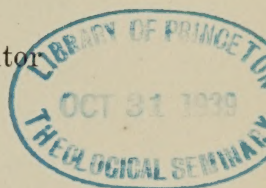
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UNIVERSITY OF IOWA STUDIES IN CHILD WELFARE

PROFESSOR BIRD T. BALDWIN, PH. D., Editor



FROM THE IOWA CHILD WELFARE RESEARCH STATION

VOLUME I

NUMBER 2

A SURVEY OF MUSICAL TALENT IN THE PUBLIC SCHOOLS

REPRESENTING THE EXAMINATION OF CHILDREN OF
THE FIFTH AND THE EIGHTH GRADES IN THE
PUBLIC SCHOOLS OF DES MOINES, IOWA
WITH THE AUTHOR'S
MEASURES OF MUSICAL TALENT

by

CARL E. SEASHORE

PUBLISHED BY THE UNIVERSITY, IOWA CITY
(2d edition, February, 1924)

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EDITOR'S FOREWORD

The psychology of individual differences has made significant progress during the past ten years. In *A Survey of Musical Talent in the Public Schools*, Professor Seashore makes a marked advance in the applications of psychology by formulating scientific means for analyzing and evaluating special abilities in musical talent: by establishing norms for fifth and eighth grade children; by standardizing methods, apparatus, and technique for group procedure in schools; by presenting fundamental principles for discovering musical talent and conserving musical capacity; and by developing a science of vocational guidance within this field.

This survey was made under the auspices of the Iowa Child Welfare Research Station, which is organizing a comprehensive program for the investigation of individual traits and abilities of normal children with particular reference to the earlier ages. The editor is glad to present this monograph by a recognized authority as a model of one type of applied scientific procedure in which the Station is engaged. The requests for this study which already have been received from this country and abroad assure it a wide field of usefulness.

BIRD T. BALDWIN

August 30, 1920

A SURVEY OF MUSICAL TALENT IN THE PUBLIC SCHOOLS

INTRODUCTION

The first survey employing the group of tests now called "Measures of Musical Talent" was made in Charles City, Iowa, in 1917 where we surveyed the grammar grades in the public schools. Immediately thereafter a similar survey was made upon the grammar grades of all of the children in Sioux City and Red Oak, Iowa, and upon the grammar grades in the Wyman School, which is the training school for the Teachers College in St. Louis.

In these first surveys the tests were made with the original laboratory instruments; namely, tuning forks, an audiometer, a time-sense apparatus, and musical instruments. While these experiments were of great value in helping us to adjust procedure to actual situations in the school, and are of some historical significance, they have not been published, because we later adopted the plan of putting the test material on phonograph records. Since the original instruments have been described elsewhere and are now abandoned for school use, and the phonograph records are to constitute the standard test material, we have chosen these experiments in Des Moines for the first general report of the school surveys.¹

Immediate purpose. The purpose of the present survey was to have the laboratory staff try out the new standardized

¹ This survey was undertaken on invitation of the Des Moines Board of Education, with the personal coöperation of Prof. Alfred H. Smith, Supervisor of Music. The Work of testing was divided between Mr. Henry M. Halverson and Miss Hazel M. Stanton, representing the Department of Psychology in the University of Iowa. Dr. Mabel Clare Williams and Dr. Esther Allen Gaw assisted in the study of the data. To all these the writer and the director of the Iowa Child Welfare Research Station herewith express thanks for hearty and very effective coöperation.

test material, "Measures of Musical Talent,"¹ under actual school conditions. In doing this we had several objects in view: to secure the data for the establishment of norms; to try out various alternative details of procedure; to study the reactions of pupils and teachers; to collect material as preliminary to a further study of exceptional talent; to evaluate the fitness of this test material; and, in so far as that is possible, to set a model for procedure with these measures, both in testing and in interpreting.

These are the purposes from the point of view of the laboratory staff. From the point of view of the city schools, the object was, of course, to obtain ratings of the musical talent of each child and communicate these appropriately to the authorities, and through them to the pupils.

Plan. Normally these tests would be made in the regular course of instruction, but, since the work was to be done by the laboratory staff, it could not be scattered throughout the year, but had to be given at one time in the form of a survey. This plan necessitated a certain amount of interruption of the school program which is not necessary in the regular use of the measures.

Two Grades. We limited ourselves to two grades, the fifth and the eighth; the fifth, because that is the earliest stage at which children can take a responsible part in a group tests of the kind, and it is early enough for the stimulating of musical education; the eighth grade, because that is the sorting period in which it is most important to give guidance about special work in music in the high school, or about specialized musical interests for those who are entering the vocations.

Stages of the Survey. A complete survey of this kind involves three stages: first, the making of the five basic tests;

¹Columbia Records:

A7536	Measures of Musical Talent.	Sense of Pitch, No. 1A.
12 in.	Measures of Musical Talent.	Sense of Pitch, No. 1B.
A7537	Measures of Musical Talent.	Sense of Intensity, No. 2A.
12 in.	Measures of Musical Talent.	Sense of Intensity, No. 2B.
A7538	Measures of Musical Talent.	Sense of Time, No. 3A.
12 in.	Measures of Musical Talent.	Sense of Time, No. 3B.
A7539	Measures of Musical Talent.	Sense of Consonance, No. 4A.
12 in.	Measures of Musical Talent.	Sense of Consonance, No. 4B.
A7540	Measures of Musical Talent.	Tonal Memory, No. 5A.
12 in.	Measures of Musical Talent.	Tonal Memory, No. 5B.

second, the further intensive testing of cases selected on the basis of record in the basic tests, and of others presented by teachers or parents for examination for some sufficient reason; and third, the follow-up work, representing conferences with pupil and parent, and a record of the resulting progress. The present report pertains only to the first of these three stages, the use of these basic measures, for the reason that this survey was made in the spring of 1919, just before the schools closed, and the after-war conditions have prevented us from going into the field and following up the same children through the second and third stages. It is hoped that our staff may have an opportunity in the near future to treat these last two field problems adequately.

Reports Filed. Copies of the reports of all children examined are on file in the office of the city supervisor of music and in the hands of the principal of each school. In the present report we shall only give samples of records, since the main object of this report is to serve as a guide for future work of this kind, rather than as a report of results to the local constituency.*

The data from this Des Moines survey were used as the concrete material from which to compute *distribution of capacities, percentile rank tables, and norms in the form of ogives* in the above named manual and text-book. It will therefore not be necessary to repeat that material here, particularly as anyone who wishes to get an adequate acquaintance with the nature of the tests and their interpretation must consult these two sources, together with his report, as the three dovetail into a single presentation of the same subject from different angles without duplicating; that is, the text-book presents the psychological analysis of musical talents with interpretations of measurements and evaluations; the manual contains merely the specific directions for the use

* *References.* For the purpose of this report, it is necessary to assume that the reader has access to the *Manual of Instructions*, which is furnished free with the *Measures of Musical Talent* or may be obtained upon request from the Columbia Graphophone Company, New York; and to the author's "*Psychology of Musical Talent*" (Silver, Burdett & Co. 1919), in which the whole theory of the measurement of musical talent is explained and on which the tests are based.

of the phonograph records; and this report presents some data on the use of these tests in the school.

With such "division of labor" there falls to this report essentially the following: sample of record with explanation of items; a grouping scale with suggestions for its use; comparison of boys and girls; comparison of different schools; survey of several recommendations bearing on procedure.

SAMPLE OF REPORTS WITH EXPLANATIONS

Table I A and B is a sample of the final report as left on file. It represents the eighth grade pupils in the Elmwood School, and may be regarded as a fair sample of a natural set of records for a grade.

In this table the pupils are represented by numbers, the girls, I A, by odd and the boys, I B, by even numbers. Since material of a personal nature should not be made public, the names of the children, which in the original report occupy a space after the age, are omitted from this printed report. The age given is that of their nearest birthday.

The Percentile Rank. Then follow the records for the five measures, each expressed in terms of *percentile rank*, a common unit, namely, the rank in a normal community of the kind represented; in this case, eighth grade children. The scale is 1-100, in which 100 represents the best found, 1 the poorest found, and 50 the average. The norms for these are based upon the total number of records obtained in this survey. This rank is a very convenient means of conveying meaning of widely diverging types of measurements without any more technical concept than that of percent.

A SURVEY OF MUSICAL TALENT

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TABLE I A. *Elmwood School, Girls, 8th Grade*

Number	Age	Pitch	Intensity	Time	Consonance	Memory	Brightness	Singing	Rhythm	Enjoyment	Hrs. Training
1	13	55	19	9	9	36	B	A	A	C	8 P.
3	13	86	67	84	84	25	D	B	C	D	13 V.
5	13	29	14	40	24	80	C	B	D	D	113 P.
7	14	19	19	70	18	20	E	D	C	C	38 P.
9	13	55	73	90	76	90	D	B	B	D	350 P. ?
11	14	23	3	55	58	22	B	B	B	C	102 P.
13	12	47	6	97	31	48	A	B	B	C	50 P.
15	13	78	91	60	94	71	C	D	D	D	10 P.
17	12	41	87	11	99	92	B	C	B	C	None
19	14	55	25	36	39	31	C	D	C	D	125 P.
21	12	59	25	11	39	67	A	A	A	C	188 P.
23	14	22	87	32	76	81	E	C	D	C	113 P.
25	12	68	67	93	97	67	C	C	C	C	14 PV.
27	13	93	22	24	49	88	C	C	C	C	13 P.
29	13	78	56	70	84	98	B	A	B	D	38 P.
31	14	44	78	93	58	80	C	D	C	C	25 P.
33	13	95	56	60	90	64	C	C	C	C	25 P.
35	12	41	8	---	39	83	B	C	B	D	88 V. & P.
37	13	31	2	75	66	23	D	C	C	B	25 P.
39	14	33	46	87	58	76	C	B	C	C	400 V. & P.

TABLE I B. *Elmwood School, Boys, 8th Grade*

Number	Age	Pitch	Intensity	Time	Consonance	Memory	Brightness	Singing	Rhythm	Enjoyment	Hrs. Training
2	14	10	14	40	24	4	D	E	E	B	None
4	13	7	6	32	13	---	C	C	E	B	None
6	15	41	14	40	18	38	D	C	D	B	None
8	13	41	61	84	66	59	D	C	C	B	75 P.
10	13	73	61	36	---	8	C	D	C	B	None
12	12	9	91	---	---	---	A	C	C	C	None
14	14	33	36	---	66	9	E	E	E	B	No Rec.
16	13	63	32	9	18	34	C	D	D	B	6 P.
18	12	59	67	40	49	76	A	C	B	D	10 V.
20	14	47	28	36	13	98	D	B	C	C	50 P.
22	12	86	93	98	99	91	B	B	C	C	100 Chi. P. & V.
24	13	44	61	93	66	89	C	D	C	B	No Rec.
26	11	35	83	50	13	14	B	C	B	B	None
28	13	63	56	28	66	84	E	E	D	B	None
30	13	47	25	36	---	27	C	C	D	D	18 P.
32	13	82	98	53	84	90	C	A	A	D	15 Cor. V. P.
34	11	86	51	80	76	91	C	C	C	D	25 Clar.
36	14	29	73	50	66	34	B	D	D	B	None
38	13	38	46	55	49	51	C	C	E	C	32 V.
40	13	25	51	45	13	9	D	E	C	B	5 P.

The Five "Measures." *The sense of pitch* measures the least perceptible difference in pitch. This is an index to the capacity for hearing musical values dependent upon pitch, and, therefore, indirectly for musical expression in pitch. The instructions were: "You will hear two tones which differ in pitch. You are to judge whether the second is higher or lower than the first. If the second is higher, record H; if lower, record L."

The sense of intensity measures the least perceptible difference in the intensity of the tone. This is an index to the natural capacity for hearing musical expression in terms of loudness of the tone. The instructions were: "You will hear two tones which differ in loudness, or strength. You are to judge whether the second is stronger or weaker than the first. If the second is stronger, record S; if the second is weaker, record W."

The sense of time is measured in terms of the least perceptible difference in two short time intervals. This is an index to the basic capacity for appreciating time, tempo, and rhythm in music. The instructions to the pupil were: "You will hear three clicks marking off two intervals of time. If the second interval (that is, the time between the second and third clicks) is longer than the first interval, record L; if it is shorter, record S."

The sense of consonance is measured in terms of the ability to judge the relative degree of consonance or dissonance in a graded series of consonance-dissonances. It is an index to the basic capacity for the appreciation of harmony and melody. The instructions were: "You will hear two combinations of two tones each; one combination is better or worse than the other in consonance (harmony). A good combination is one in which two tones are smooth, and blend, tending to fuse together into one. A bad combination is just the opposite. If the second combination is better, record B; if worse, W."

Tonal memory was measured in terms of memory span for a sequence of unrelated tones. It is an index to the natural capacity for remembering, imaging, and imagining tones soon after hearing. The instructions were: "In each trial you will hear a series of tones played twice. In the second playing,

one note is changed. In listening count mentally; for example, 1, 2, in the first playing, and then likewise in the second playing, so that you may identify the one that was changed without error."

Teachers' Ratings. Then following the three marks, singing, brightness, and rhythm. These represent the judgment of the teacher rendered under the following instructions:

"Let the principal and the teachers, who know the children best, in the ward building, meet and classify the children as follows in each of the three items, brightness, singing, and rhythmic action:

Select the best 10% of the children listed and mark them A.

Select the poorest 10% and mark them E. Then,

Select the next best 20% and mark them B.

And the next poorest and mark them D.

This will leave 40% who get mark C, or an average.

Record the appropriate letter, A, B, C, D, or E, after each child's name in the respective columns.

Brightness: By brightness is meant the estimate of the natural ability to do the work that the school requires under favorable conditions. This does not mean school grades, because these are often low on account of lack of effort.

Singing: By singing we mean the ability to sing as shown in the public school music, taking everything that you can into account. Special features, such as the quality of the voice, skill in sight reading, and musical activities, may be mentioned under "remarks" if conspicuous.

Rhythmic Action: For rhythmic action base the general classification on your general observation of the child's ability to march, to skip, to dance, to take part in games requiring motor coördination, work in gymnastics, etc."

Enjoyment: In order to secure a record of children's judgments about their own enjoyment of music, the children were directed as follows:

"Put an X in front of the sentence which is true for you:

I do not enjoy music.

I like music fairly well.

I am very happy with my music.

Music is one of my greatest pleasures."

These responses were entered in the report as D, C, B, or A, the notation assigned to the respective propositions in the order given. Thus A represents the highest and D the lowest rating.

A study of these self-ratings shows that they do not correlate closely with the capacity measured or with the teacher's rating on the three items named. We should attach but little significance to these opinions in musical guidance. But the record may be worth having because it encourages us to ask why a child likes or dislikes or asserts that he likes or dislikes music. From this point of view the material is most stimulating and might start very profitable inquiries.

With this a number of other questions were included on opportunities for hearing music, character of music preferred, opportunities for musical performance, and questions bearing on heredity, but it does not seem worth while to burden the present report with that mass of material, although it is filed with the original report. The study of heredity which we intended to pursue here has been taken up on a larger scale by Miss Stanton in the systematic measurement of talents in famous musical families for the purpose of applying Mendelian principles to the problem.

Training: The last column states the number of private music lessons that the pupil has had, according to his own report, after a conference with his parents or teachers. The figures are given in terms of whole hour private lessons; hence, for lessons of twenty minute periods, three would count as one hour, and for half hour periods, two would count as one hour. The letters designate the instrument: V, violin; P, piano; Cor., cornet; Fl., flute, etc.

GROUPING

Classes recognized. For the purpose of ready reference in the selection and interpretation of returns, it is convenient to adopt a provisional grouping based entirely on the evidences in the objective record, leaving out of account personal knowledge of the child. For this purpose we adopted the following classification:

98%—100%	V. S.	Very Superior
91%— 97%	S.	Superior
76%— 90%	E.	Excellent
51%— 75%	G.	Good
26%— 50%	F.	Fair
1%— 25%	P.	Poor

Basis of Grouping: The percentage ratings in this table denote the final rank assigned by the examiner on the basis of the showing in the five objective measures. It is *not* the average of these. It takes no account of *case history, personal knowledge of the child, record of training, or rating on enjoyment*. The three teachers' ratings are regarded as only of secondary evidence and count only in case of doubt on the basis of the measures. The grouping is an interpretation of the net significance of the five measures as interrelated.

Incomplete records eliminated. Before making this grouping, all cases in which two or more of the five records of tests were missing were eliminated and designated as incomplete (I). The number thus eliminated amounted to 23% for the fifth grade and 5% for the eighth grade. These gaps in the records are due to various causes: *e. g.*, absence from the class at the time of a test; failure to respond satisfactorily to the test as noted by the experimenter; and internal evidence in the record of misunderstanding or other error. These records are not rejected but are merely set aside to be handled with reserve, without prejudice. It should always be made clear that the designation "I" is not itself any index to rank, although a record so classified may contain very definite information, favorable or unfavorable, as far as it goes. Since they are thrown out on the ground of incompleteness, and not on the ground of quality, the elimination does not affect the above grouping in percentages seriously, although there is actually a tendency of poor observers to leave "incomplete" records.

Objective basis. It is important to make this first grouping entirely on the basis of the objective record, quite independently of the personal knowledge of the pupil, or other systematic information gathered. This is important from the scientific point of view because it presents the objective rec-

ords as such to speak for themselves. It is often in the residuals, *i.e.*, the apparent discrepancies between objective records and expected results, that we make our most important findings. The reason for this becomes clearer when we bear in mind that the quantitative measures are specific and unbiased, whereas all other information is unanalyzed and usually loosely expressed, without either opportunity for exactness or realization of actual significance.

After this concept of the objective record has been formulated, great stress should be laid upon the accumulation of personal history, personal evaluation of the pupil's musical interests and achievements, outlets for musical expression, and countless other factors, often exceedingly intricate, which enter into the personal rating of talent and prospective achievement. The counsellor of the pupil will then have at command two profiles, as it were, of the talent, and can bring the two together for more effective analysis of the case than if personal bias or theory had entered into the objective record.

Danger of averaging. The first temptation is to find the average for each case as an objective basis in grouping; but that must always be discouraged. The making of this rating must be a personal judgment on the part of one who understands the meaning of each measure, and can balance factors so as to arrive at the best estimate of the extent to which the child should be encouraged in any music whatever. We should discourage every tendency to rank the pupils by averages, although, in the long run, there will be some agreement between the averages and the grouping adopted. The reason for this objection to the use of averages lies in the fact that we are dealing with different kinds of talents, as opposed to different quantities of talent in general. One person may rank 99% in pitch and 9% in time; another, 9% in pitch and 99% in time. Both are capable of becoming musical; one through tonal accomplishment; the other through rhythmical accomplishment; although each will have specific limitations. Our grouping should, therefore, be merely an index figure to be used only for the convenience in handling records. When advice is given, it should never be given merely in terms of this

label, but in terms of details shown in the analyzed objective record as interpreted in the light of supplementary data.

Exactness a restriction. This necessity of using personal judgment in the grouping instead of resting on mathematical averages, makes the grouping difficult. It is well that it should be so, because that forces us to face the fact that we have here only a few selected measures; that these are very specific and do not represent talent as a whole; that they are measures of relatively different kinds of talent; that the value of each is dependent upon its relation to the other; and that some talents are more essential than others. Indeed, to the extent that we deal with exact facts, our conclusions must be restricted, for the conclusion should never hold more than is involved in the premise. We must recognize countless varieties of the possible inter-relations of talents and should be correspondingly cautious against artificial classifications and valuations.

Method of grouping. In forming the typical groups or norms here presented, Tables II to VII, we took all records for this survey and proceeded as follows:

We first marked all cases in which two or more test records were missing "I." By writing this letter in front of these records we set them aside as not available for the purpose of grouping. We then went through all of the remaining records by direct inspection, and assigned a tentative grouping as a rough approximation to the required distribution.

Procedure with the eighth grade may serve as an illustration. We found that in this preliminary grouping we had marked more than 4% V. S. To correct this we reviewed the cases marked V and culled by dropping case after case, in the order of doubtfulness, until, by this process of elimination the V. S.'s had been reduced to 3% of the total number of available records. The tentative V. S.'s thus dropped became certain S's. Computation showed that we still did not have enough S's to make 7%. We, therefore, reviewed the E's and selected from them, in the order of apparent excellence, enough to raise the number of S's to the required 7%. A similar procedure was followed for the E's. Since the distinction of those near the average is close and difficult to make we passed the next two groups and attacked the P group. Finding that we

had marked too many P's, we proceeded to select enough of the best of this group, in the order of excellence, to be raised to the B group in order to reduce the P group to the required 25%. This left 50% of all of the available records to be disposed of as G's and F's. We first reviewed the tentative grouping of these and checked all that were certain to be G's and those that were certain to be F's. This left a certain number of G's and F's in the margin of doubt. As they were now isolated and reduced to a small number it was a comparatively simple matter to cast off from this group, in the direction of

TABLE II. *VERY SUPERIOR* (V. C.) 98-100%

Number	School	Age	Pitch	Intensity	Time	Consonance	Memory	Brightness	Singing	Rhythm	Enjoyment	Hrs. Training
85	A. H.	15	93	61	84	90	96	D	E	C	A	91 P.
10	A. H.	13	98	73	90	97	83	D	E	D	C	No record
24	A. H.	13	99	87	93	90	81	A	A	C	C	48 P.
16	Cas.	14	82	93	90	80	78	A	C	C	C	None
5	Cat.	14	90	87	75	---	99	B	C	B	A	No record
21	Cat.	14	90	61	93	76	83	D	C	A	A	40 P.
6	Cat.	12	90	83	93	76	89	C	C	E	C	20 P.
12	Cat.	13	97	91	90	76	91	D	C	C	C	30 P.
32	Cat.	15	98	93	93	97	83	C	A	B	D	No record
57	Cro.	13	99	67	84	76	89	A	B	A	A	30 P.
46	Cro.	14	68	97	99	84	98	B	C	B	B	No record
22	Elm.	12	86	93	98	99	91	B	B	C	C	100 P. and V.
5	Gre.	14	97	78	98	84	84	C	C	C	B	No record
28	Gre.	13	97	100	98	84	62	C	C	C	C	26 P.
32	Gre.	12	93	95	90	100	99	A	A	A	B	80 V., 20 P.
11	Han.	11	95	78	60	76	90	B	C	C	BA	No record
8	Han.	15	97	91	90	90	74	E	D	E	CD	No record
15	Hub.	13	95	67	98	97	99	C	A	A	A	3 terms P. & V.
11	Kir.	12	90	99	75	90	86	A	A	A	A	51 P.
2	Kir.	13	90	93	100	76	62	B	C	C	C	35 V.
22	Kir.	14	90	78	100	99	53	B	B	C	A	104 V.
20	McH.	13	86	97	90	97	96	C	B	B	B	? P.
51	Phil.	15	98	95	70	84	83	C	E	D	C	No record
2	Byr.	14	82	93	87	90	88	A	A	A	C	No record
13		12	93	78	87	99	95	B	B	C	B	25 P.

G or F, enough of this group, in the order of certainty, to equalize the two classes.

A Grouping 'Scale.' Tables II to VII constitute "types" of records, grouped in the manner just described. They are representative, in that we have taken the first twenty-five cases for each group in the order in which the records chance to come in our complete table of records for each group. For practical purposes in the immediate future this sample may serve for the evaluation of single records or groups of records not large enough to permit an independent grouping as in the present case. We may use this as a sample page of records somewhat in the manner that we use the handwriting scales at the present time, by assigning a given record to the group in which it finds its nearest match.

The Weighting. On the whole, we place most stress on the possession of the sense of pitch. Next to that comes the sense of time and the sense of intensity, in the order named. These three are basic, each representing a prominent attribute of music which may distinguish musical types. Thus we have the tone (pitch) musician, the rhythm (time) musician, and the expression (intensity) musician, if we may use these words in a somewhat forced meaning. The best is, of course, the possession of all three powers. Consonance is a complex, more or less related to pitch and, while memory is good for a musician, tenacious memory is not essential to certain kinds of musicianship.

The Secondary Criteria. The pupil marked A in brightness will make an entirely different kind of a musician from one marked E. Yet if the E pupil in brightness shows a high rank in other musical capacities he may still be regarded as decidedly musical, although the low general intelligence will make its unmistakable stamp on his musicianship. The same thing applies to the interpretation of rhythm and singing. The rating on rhythm is, however, of doubtful value except as a general index to the motor development of the child, because the concept can not be adequately defined in the instructions to those who rate, and it requires specialized training to observe motor rhythm in a penetrating way. While singing is a fairly definite concept, the grade on this achievement, more

than any other, impresses us with the difficulty of assigning general quantitative values. If a child is marked C in singing, what do we know about quality of voice, range of voice, register of voice, volume, training, inducements to sing, and many other factors which influence the teacher's estimate of achievement?

TABLE III. SUPERIOR (S.) 91-97%

Number	School	Age	Pitch	Intensity	Time	Consonance	Memory	Brightness	Singing	Rhythm	Enjoyment	Hrs. Training
99	A. H.	14	55	73	93	84	95	A	C	A	A	75 P.
77	A. H.	15	81	61	87	99	67	B	A	C	A	20 Voi. 26 P.
95	A. H.	14	78	78	60	84	81	B	C	B	A	No record
111	A. H.	12	86	61	65	90	64	B	B	A	---	---
28	A. H.	15	97	67	45	99	95	B	B	B	A	115 V.
30	A. H.	15	95	97	60	94	53	D	C	D	C	26 P.
56	A. H.	13	82	91	93	66	56	C	A	A	A	23 Trombone
6	A. H.	14	93	78	80	18	67	A	B	B	A	8 V.
88	A. H.	12	97	56	70	90	71	B	C	C	A	No record
3	Bd.	13	90	78	75	87	78	B	---	---	A	45 P.
4	Bd.	13	97	61	99	62	81	C	---	---	C	10 P.
10	Bd.	13	86	95	97	92	45	C	---	---	A	No record
22	Bd.	15	100	56	93	92	74	---	---	---	---	---
34	Bd.	14	63	56	93	66	80	B	---	---	A	1 P.
19	Cas.	14	97	41	65	66	99	C	C	B	B	5 P.
6	Cas.	13	63	87	65	98	59	A	B	C	A	75 V.
9	Cat.	12	90	67	80	66	62	B	C	C	C	52 P.
25	Cat.	14	78	87	75	94	59	C	C	B	BC	78 P.
35	Cat.	13	82	51	98	66	86	B	C	E	B	64 P.
7	Cro.	15	93	98	50	84	88	C	B	B	A	16 P.
37	Cro.	12	98	93	60	49	67	B	B	B	B	26 P. V.
43	Cro.	14	97	93	98	31	96	B	B	B	A	No record
15	Elm.	13	78	91	60	94	71	C	D	D	A	10 P.
25	Elm.	12	68	67	93	97	67	C	C	C	B	14 P. V.
34	Elm.	11	86	51	80	76	91	C	C	C	A	25 Clar.

Danger of quantitative general ratings. We must persistently warn against the danger of assigning quantitative rating to undifferentiated factors. The beginner in the use of tests particularly needs to be impressed again and again with the

TABLE IV. EXCELLENT (E.) 76-90%

Number	School	Age	Pitch	Intensity	Time	Consonance	Memory	Brightness	Singing	Rhythm	Enjoyment	Hrs. Training
35	A. H.	12	93	78	40	58	74	A	B	B	A	1 P.
57	A. H.	14	78	46	36	94	97	B	B	B	A	25 P.
59	A. H.	14	93	91	60	66	80	C	C	B	A	100 P.
89	A. H.	15	95	51	45	90	59	C	C	C	A	No record
115	A. H.	15	86	91	70	100	28	C	C	C	....	....
123	A. H.	14	82	61	32	76	69	B	C	C	A	45 P.
129	A. H.	15	73	83	60	66	56	D	E	C	C	No record
135	A. H.	15	59	46	87	94	83	B	B	B	A	10 P.
139	A. H.	14	78	32	65	84	94	C	C	B	A	No record
6	A. H.	14	68	41	70	94	86	B	B	A	A	96 P.
8	A. H.	16	86	91	98	49	45	B	B	A	A	No record
22	A. H.	14	68	95	80	24	69	C	A	B	C	No record
36	A. H.	13	51	73	87	84	74	B	B	A	C	No record
42	A. H.	14	73	83	65	90	71	C	A	C	B	No record P.
50	A. H.	15	90	78	6	66	71	A	B	A	C	No record
66	A. H.	14	82	67	93	13	76	A	C	B	C	No record
76	A. H.	14	31	97	90	84	51	A	E	D	C	No record
92	A. H.	14	100	25	80	66	78	A	C	C	B	110 V.
34	A. H.	12	82	32	84	66	59	C	C	D	A	....
60	A. H.	13	82	67	75	49	80	C	B	B	A	No record
72	A. H.	13	73	83	65	94	80	C	C	B	A	100 P.
98	A. H.	13	78	95	90	18	74	C	B	C	C	No record
9	Bd.	12	68	36	50	90	71	C			A	2 P.
15	Bd.	14	78	56	70	31	93	C			A	No record
19	Bd.	14	93	16	60	84	53	A			A	18 P.

responsibility of using all quantitative records merely as concrete cues which lead to a more penetrating analysis of the actual situation.

Same for All Grades. This grouping of cases taken from 8th grade records is equally applicable to all grades as a scale, since all records are in equivalent terms, *i. e.*, per cent rank for each grade.

Uses of This Grouping. The primary object in the grouping is to facilitate the handling of records. It may be used, first, to secure a general designation which may be conveyed

TABLE V. *GOOD* (G.) 51-75%

Number	School	Age	Pitch	Intensity	Time	Consonance	Memory	Brightness	Singing	Rhythm	Enjoyment	Hrs. Training
1	A. H.	13	63	91	55	13	59	E	C	E	C	No record
9	A. H.	12	25	78	75	99	36	A	A	B	A	? P.
23	A. H.	13	98	36	17	76	48	A	B	A	A	28 P.
51	A. H.	13	41	56	50	94	71	B	B	C	C	72 P.
65	A. H.	13	68	73	84	49	88	C	C	C	A	36 P.
67	A. H.	12	55	....	36	84	84	B	C	C	A	? P.
71	A. H.	13	63	32	70	94	78	B	A	C	A	75 P.
81	A. H.	13	33	61	84	84	51	A	C	A	B	18 P.
87	A. H.	13	73	22	55	76	69	B	C	A	A	45 P.
1	A. H.	14	78	19	55	84	84	C	C	A	....	....
3	A. H.	15	41	10	32	99	88	E	C	C	B	25 P.
33	A. H.	15	73	32	....	76	84	C	C	C	B	1 year P.
35	A. H.	15	82	73	28	58	83	C	C	C	A	No record
41	A. H.	15	41	46	75	90	100	E	C	C	A	40 P.
45	A. H.	16	12	73	84	39	62	C	B	C	C	No record
61	A. H.	13	38	32	60	58	100	D	C	C	B	190 P.
69	A. H.	14	33	67	60	58	62	C	C	C	A	50 P.
71	A. H.	16	47	41	60	90	62	D	C	D	A	30 P.
79	A. H.	15	63	....	93	49	62	A	B	A	A	35 P.
83	A. H.	17	68	61	45	49	91	C	C	C	A	16 P.
93	A. H.	15	90	25	75	84	31	D	C	C	A	104 P.
99	A. H.	14	55	78	36	94	18	C	C	C	A	18 P.
103	A. H.	14	7	83	80	76	23	B	B	C	C	? P. V.
107	A. H.	14	68	32	36	94	64	E	C	D	A	32 V.
109	A. H.	13	44	83	20	58	90	D	E	C	A	7 P.

to those who are entitled to a report. Thus a record is Very Superior, Superior, Excellent, Good, Fair, Poor or Undetermined. The "Poor" should be regarded as "Undetermined" until after verification of the record by repeating the test, thus giving them every benefit of the doubt.

Where such a rating is given out in classifications and individual reports it should always be accompanied with the charge to take the analyzed ratings into account. Thus, our twenty-five cases of Very Superior are all different as is shown by the specific record. They may all be Very Superior, although each has its own character.

TABLE VI. FAIR (F.) 26-50%

Number	School	Age	Pitch	Intensity	Time	Consonance	Memory	Brightness	Singing	Rhythm	Enjoyment	Hrs. Training
3	A. H.	14	25	22	80	66	38	E	C	E	A	No record
5	A. H.	14	59	61	24	76	31	B	A	B	A	5 P.
15	A. H.	14	55	36	45	66	67	B	D	E	A	10 P.
19	A. H.	14	25	36	84	66	78	E	D	C	B	No record
47	A. H.	14	73	19	....	94	34	E	D	D	A	27 P.
49	A. H.	13	73	8	24	13	71	D	D	E	C	No record
59	A. H.	13	47	51	70	49	25	B	B	A	A	No record
73	A. H.	15	78	67	32	13	59	C	C	C	A	1 P.
77	A. H.	14	38	41	75	49	6	C	C	C	B	5 P.
79	A. H.	13	33	28	65	84	88	D	E	C	A	No record
83	A. H.	14	73	22	24	76	40	B	C	C	A	20 V.
85	A. H.	13	41	32	45	....	80	B	C	C	C	45 P.
91	A. H.	15	68	16	84	58	29	C	D	D	C	No record
101	A. H.	13	55	51	50	24	78	C	A	E	A	35 P.
9	A. H.	14	73	12	32	49	74	C	C	D	A	52 P.
11	A. H.	16	35	32	36	90	78	B	C	C	B	No record P.
13	A. H.	17	31	46	60	18	64	B	B	C	....	No record P.
15	A. H.	16	14	22	70	66	22	C	C	B	A	No record
23	A. H.	14	41	67	....	66	36	A	B	B	A	48 P.
25	A. H.	14	78	14	28	58	38	C	C	C	A	70 P.
31	A. H.	15	38	....	40	66	71	C	C	C	A	50 P.
53	A. H.	15	33	32	36	76	88	A	B	B	....	....
55	A. H.	15	55	51	50	66	27	D	B	B	A	6 P. 10 V.
65	A. H.	14	12	28	28	76	51	C	C	E	A	No record
67	A. H.	14	63	32	93	18	62	B	C	C	A	No record

The grouping is also convenient in the sorting of cases for follow-up work and further examination. The first three groups should be selected for special encouragement. All of these are good enough for professional or other highly intensive training in music, vocational or avocational, though many may not have studied music at all. They should be encouraged to consult good teachers and, if possible, to take further tests of capacity. The Good and Fair should be encouraged in music according to the internal evidence of the records. The Poor or Undetermined should be set aside for re-examination.

TABLE VII. POOR (UNDETERMINED) (P.) 1-25%

Number	School	Age	Pitch	Intensity	Time	Consonance	Memory	Brightness	Singing	Rhythm	Enjoyment	Hrs. Training	Hrs. Training
7	A. H.	13	31	12	...	13	9	C	B	B	A	?	V.
11	A. H.	15	....	12	28	31	45	C	B	C	A	6	P.
13	A. H.	14	25	41	28	94	20	C	C	D	A	No	record
17	A. H.	12	17	19	11	31	9	D	C	D	A	36	P.
21	A. H.	13	63	8	28	18	31	C	D	C	....	75	P.
25	A. H.	16	14	28	84	49	14	C	B	C	A	No	record
27	A. H.	14	9	36	20	24	11	B	B	C	C	No	record
29	A. H.	14	....	25	24	31	36	D	E	D	A	No	record
31	A. H.	13	38	8	24	....	69	B	B	B	B	No	record
37	A. H.	12	73	10	14	39	28	D	C	C	A	13	P.
39	A. H.	14	51	16	....	49	48	C	C	A	C	No	record
41	A. H.	14	27	10	24	39	45	B	A	C	A	85	V. and P.
43	A. H.	14	7	28	65	31	84	E	C	D	....	No	record
45	A. H.	14	51	28	20	24	43	D	B	C	C	No	record
53	A. H.	13	63	16	24	13	43	B	B	B	C	No	record
55	A. H.	15	....	12	32	9	12	B	C	B	A	No	record
61	A. H.	15	....	36	36	76	17	D	D	E	A	10	P.
93	A. H.	12	47	14	20	66	23	D	E	D	C	No	record
103	A. H.	13	29	3	14	13	9	A	C	B	C	No	record
5	A. H.	14	12	....	20	58	36	E	C	C	....	No	record
7	A. H.	....	12	46	....	76	2	C	C	C	....	....	....
17	A. H.	16	....	3	24	49	4	D	D	E	A	No	record P. V.
19	A. H.	14	9	16	55	24	69	B	C	B	C	93	V.
21	A. H.	14	27	12	32	....	40	A	B	A	....	....	....
27	A. H.	15	20	1	36	66	56	C	C	C	C	No	record
29	A. H.	14	33	41	....	39	25	C	C	C	A	8	P.

For the study of one year's record in a city school system, the examiners may group these records by themselves, but ordinarily, in examining a school or a small number of schools, the present grouping may be used in the same manner that we use handwriting scales.

What musical guidance shall be given for each group we are not yet in a position to state. We are, however, one big step in advance of practice in the past—we have some specific facts before us as a basis of advice.

KEY TO THE RECORDS

Pitch Key

	A	B	C	D	E	F	G	H	I	J
	30	23	17	12	8	$1\frac{1}{2}$	1	2	3	5
1.	H	H	L	H	L	L	L	H	L	H
2.	H	L	H	H	H	H	L	L	H	H
3.	L	L	L	L	H	L	H	L	L	L
4.	H	L	L	L	L	L	L	H	H	H
5.	L	H	L	H	H	H	H	L	H	L
6.	L	H	H	L	H	H	L	H	H	L
7.	H	L	H	L	L	L	L	L	L	H
8.	H	L	L	H	H	L	L	L	H	L
9.	L	L	L	L	L	H	H	L	L	L
10.	L	H	L	H	H	H	L	H	L	H

KEYS, DISTRIBUTIONS, AND NORMS

Reference to the Manual. For the benefit of the casual reader the following samples of treatment are introduced from the *Manual* and *Text-book*. The illustrations are for the sense of pitch; the treatment of the other measures is analogous.

The phonograph records of pitch were made with tuning forks very accurately standardized. The instructions given by the examiner are:

“You will hear two tones which differ in pitch. You are to judge whether the second is higher or lower than the first. If the second is higher, record H; if lower, record L.” (Manual p. 7).

The pitch disk contains one hundred trials, equally distributed over ten intervals from one-half vibration up to thirty vibrations in a geometric ratio of the second order. These one hundred trials may be repeated as often as the time permits in order to secure a good average. After the record has been completed it is corrected by the following key which shows the actual order in which the trials were made, the numbers at the top being the difference between the two tones in terms of vibrations. One vibration is equivalent to one fifty-fourth of a tone. The number of mistakes is then counted and the per cent of right answers is computed.

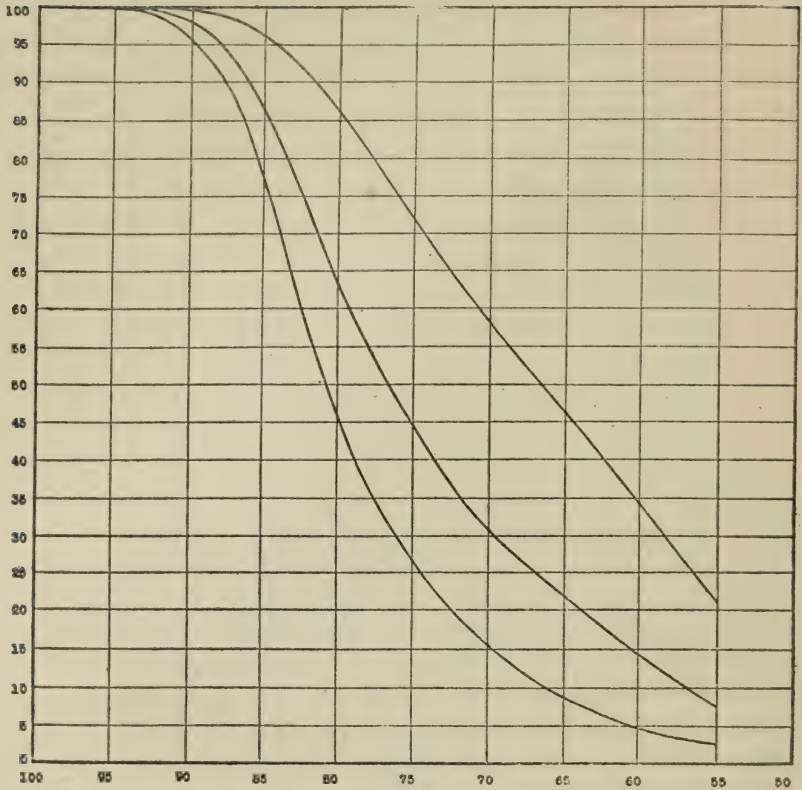


Fig. 1. NORMS FOR THE CONVERSION OF PER CENT RIGHT INTO RANK
The middle norm represents eighth grade children; the one above, fifth grade children; the one below, adults.

This per cent of right answers is then converted into percentile rank by reference to Table VIII in which the conversion figures are given for adults, eighth grade, and fifth grade. This table is represented graphically in Fig. 1, in which any per cent right for adults, eighth grade, and fifth grade may be converted into percentile rank by running vertically from the given per cent right indicated on the base line up to the ogive in question, then turning horizontally to the left where the scale shows the per cent right.

TABLE VII. *Rank for Pitch*

%Right	Adult			8th Gr.			5th Gr.		
	Adult	8th Gr.	5th Gr.	%Right	Adult	8th Gr.	5th Gr.		
100-94	100	100	100	74	23	41	69		
93	99	100	100	73	21	38	66		
92	99	100	100	72	19	35	63		
91	98	99	100	71	17	33	61		
90	96	98	100	70	15	31	59		
89	94	97	100	69	13	29	56		
88	91	95	99	68	12	27	53		
87	87	93	99	67	11	25	51		
86	81	90	98	66	10	23	49		
85	76	86	97	65	9	22	47		
84	70	82	95	64	8	20	44		
83	63	78	93	63	7	19	42		
82	56	73	91	62	6	17	40		
81	50	68	89	61	5	16	37		
80	45	63	87	60	5	14	35		
79	40	59	84	59	4	13	32		
78	36	55	81	58	4	12	29		
77	32	51	78	57	3	10	26		
76	29	47	75	56	3	9	23		
75	26	44	72	55	3	7	21		

In order to show distributions for various purposes it is convenient to present them, as in Fig. 2. The scale at the

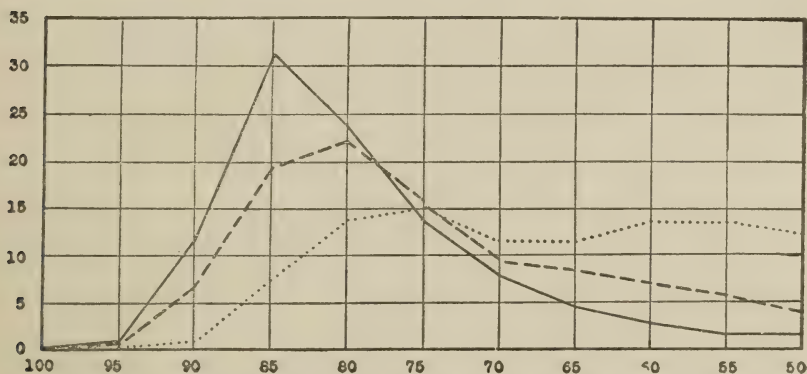


Fig. 2. DISTRIBUTION OF CAPACITIES IN THE SENSE OF PITCH
 Solid line, adults; dashes, eighth grade children; dots, fifth grade children.
 The numbers at the bottom denote per cent right; the numbers
 at the left the percentage of cases for each level.

base runs from 50% right to 100% right. The cases are grouped symmetrically about the numbers given; *e. g.*, 85% right means from 82.5 to 87.4 inclusive. The scale at the left gives the per cent of cases that occur for each per cent right.

WHAT TO LOOK FOR IN THE MUSICAL TALENT RECORDS

It would take volumes to discuss adequately the material that the educator may draw from a survey of this kind in a city school. There is a mass of material for statistical treatment and for interpretation from the point of view of Psychology, Education, and Music. Much of this is discussed in the "*Psychology of Musical Talent.*" I can here merely draw attention to the presence of this rich source of material and urge investigation by this method.

Discovery of Talent. The primary object of a talent survey is to locate talent. The investigator will be astonishingly gratified at the large number of items which constitute marked evidence of talent that has remained quite unrecognized and undeveloped. It is not claimed that these records reveal talent as a whole, but they do reveal specific talents which can easily be interpreted in terms of capacity for musical achievement. It is to the interest of the community, the school, and the home that this talent should be discovered early enough that it may be directed into opportunities for full development.

Even the identifying of known talent by the objective verifying and analysis of the talent is in a sense also discovery. The objective encouragement for intensive achievement which comes of such a rigid inventory becomes a profound stimulus to sustained effort. Many persons of superior talent are not taking their music seriously because they are not aware of their exceptional powers. To be told that you are proved to be in the best three per cent, for example, is not only encouragement but becomes also a challenge. It is from the higher groups that we must get our great musicians, and in a survey of this kind we have for the first time an objective and standardized method for the sorting of talents.

Explanation of Talent. "Musical" is a very loose term. These measures clearly characterize various kinds of talent; that is, they often show where the *fortes* as well as the *faults* lie. It is quite as important to know what kinds of talent the pupil possesses as to know their average magnitude. The teacher who may have worried about the rhythm of the pupil

exclaims, "There it is!" when she sees the very low rank in the sense of time of this pupil who sings well in true pitch, for which he has a high rank. "It is uncanny!" says another teacher when she sees how quickly and clearly the measures identify weak and strong points.

Let the thoughtful music teacher peruse a page of these records of her pupils and she will have not only explanations, but many challenges to meet the situations therein revealed. These challenges pertain on the one hand, to those cases in which a high talent may be the medium for a certain kind of musical achievement and, on the other hand, to those in which an impediment is of such a nature that it can not be removed but must be avoided. This recognition of difference in *kinds* of talent is the crying need of musical education today. One advantage of the objective record is that it will gradually bring the facts to the attention of the community whether the teacher is awake to their significance or not. Objective facts assert themselves.

Certifying Absence of Talent. One of the most cruel practices in musical education is the blind procedure of forcing the untalented to perform as if they were talented. The objective identification of specific impediments and the exact verification of these therefore becomes an important factor in the conversion of energies of the child. This is true both for the ascertaining of flat or general limitations and for the isolation of partial or specific limitations. Educators and parents are facing the time when they must stand in horror in the realization of what cruelties are imposed by unreasonable demands upon those who suffer from impediments. It is not a question of depriving anyone sparingly gifted of music but rather that of directing the existing powers into feasible channels of development.

The Magnitude of Individual Differences. A study of the range of distribution in the magnitude of capacities for each talent, as shown by the graphs in the *Manual of Instructions*, brings the situation into the concrete, showing that we are dealing here not with differences of double, triple, or quadruple merely, but with differences of a ten-fold, fifty-fold, and one hundred-fold magnitude in actual quantitative measure-

ment. When the teacher inspects the report and finds that in actual quantitative terms one pupil has ten, fifty or one hundred times the capacity of another in the same class, she is faced with a concrete problem which has never been brought to her attention so forcibly before. Her traditional effort to treat the two alike or to be satisfied with approximately equal returns from different pupils has been tolerated merely because, until we secured these quantitative measures, no one had realized that such enormous differences in musical gifts existed. There rests a moral obligation upon the school administration to use the means at hand for the discovery of the gravity of the actual situation.

Verification of Findings. The first impression of one who is not acquainted with evidence of this kind is to think that those who are low or irregular can be brought up. But with material in hand standardized rigidly in content and procedure, we are able to repeat the test as often as desired to show that, after one fair test has been given, the test may be repeated again and again only to be verified within the normal limits of fluctuation in observations of this kind. To make this all the more impressive pedagogically, those teachers who claim that they can create talent in the absence of talent should be forced to run a series of training exercises over months by their best method and then check up by actual measurement to find out the degree of their success, if any.

Hill and Valley. Superintendents are often anxious to find in these measures a means of rating efficiency of training, social advantages, and race differences. The general feeling prevails that the record of the children on the hill should, of course, be better than the record of talent of children in the valley where the poor and neglected live. Barring differences due to favorable or unfavorable conditions in the making of the test, we find that in both cases we are dealing with human nature which is quite evenly distributed regardless of social, economic, or educational status. The measures, therefore, have a peculiar mission in bringing to the attention of the authorities the presence of neglected talent in the valley, *i. e.*, poorer districts, and the danger of allowing this talent to go to waste by neglect.

Bright and Dull. Except for the factor of musical intelligence as a talent in itself, musical talents are relatively independent of the general brightness or dullness of the child. This is shown in a striking manner in the comparison of teachers' ratings on brightness with the grouping of the children on the basis of their measured talents. Here again in the problems of education, conservation, and social service, we must face some stern facts that should be taken into account.

Trained and Untrained. Parents and teachers will find food for thought in a study of the distribution of the privileges of musical education as indicated by private lessons in comparison with the measured talents. It is not enough to say that there is only a small indication to show that musical education goes to the musically talented. The teacher must be forced to collect the facts herself, verify them herself, keep them on her table, and ponder over them before she washes her hands of the responsibility of communicating the facts to parents and patrons, or the responsibility of taking them into account in organization of the music program. Those who have at heart community singing, social service, and the conservation of artistic energy will find in these figures indications of opportunities of profitable expenditure of effort.

Those Who Sing and Those Who Don't. The rating on singing gets an entirely new significance when interpreted in its relation to the measured capacities in talents. Very often children sing indifferently, badly, or do not sing at all without any excuse except that of maladjustment to the school, or some other fancied grievance. Others do not sing because they are not fitted to appreciate or perform the kind of music which is required of them. Still others make a bold effort, somewhat futile, in the face of limitations. The analyzed ratings should lead the teacher to a serious study of the extent to which the training in singing is developing the actually existing faculties.

Likes and Dislikes. A study of the children's own rating of themselves in regard to "enjoyment" of music in the light of observed performance and attitudes in music, in the light of the rank in the measures, and in the light of personal follow-up work with individual cases, soon exposes the danger of

attaching much significance to such "opinion" in deciding upon character and extent of training, or judging what music means to the child. If it were not equally true of adults we should be prone to say that such judgments are notoriously irresponsible even under the best intentions.

Young and Old. The fact that musical talent is quite independent of age stands out clearly in the report. Gold is gold, and lead is lead, young or old. How fortunate it is to be able to discover the gold early, while there is still time to put it into the most profitable circulation!

Inheritance. We have experiments now in progress to show that musical talents are inherited, not as "musical ability" as a whole, but in the form of specific talents, such as those here measured, and that each specific talent or trait in music may be as independent of other musical traits as color of hair is independent of stature. To the educator who is interested in heredity the data in hand contain most interesting information about the relation of the children to their respective musical or unmusical families.

Awakening of Music Teachers. The administration will observe a striking reaction on the part of intelligent teachers to data of this kind. It stirs them to take a new point of view, to "question nature," to observe for themselves, to take an entirely new attitude toward this problem. They will first be baffled, but that is wholesome. To awaken an experimental or inquiring attitude toward the situation in music is a great step in advance.

SOME SUGGESTIONS ABOUT PROCEDURE

For the benefit of those who plan to introduce these measures, some suggestions on the basis of our experience may be in place.

Number of Trials. A fairly complete analysis of musical talent in an individual should contain two or three scores of items. It is our experience that, for a first preliminary dragnet to identify talent for hearing music, six tests seem desirable. These six include the present five "measures" and a measure of musical imagery, which requires no apparatus.

Directions for the measuring of imagery are contained in the Text-book (Chapter X). What supplementary data should be included, bearing on case history, musical heredity, musical associations, musical activities, etc., would depend upon local and personal interests of the time.

When and Where. The testing should always be part of the regular instruction in music and should be done during music periods. The test should not only be used for securing a record, but it should be referred to in successive periods in teaching the nature and significance of musical factors such as pitch, time, intensity, consonance, memory, and imagery.

If the tests are administered regularly in the fifth and the eighth grades all children will be surveyed twice, each time a period of adjustment in which this inventory should be of great value.

By Whom. There should be in each school system at least one, usually a supervisor, who is competent to direct the use of these tests. Rather than expect every teacher to do her own testing it would be well to trust a few to do this either as supervisors or by exchanging rooms in the same building. Frequent conferences will be needed for the discussion of findings and the organization of instruction and follow-up work. The conducting of the tests is a very simple matter, but their interpretation should be left to the few who can give some time to the study of the matter.

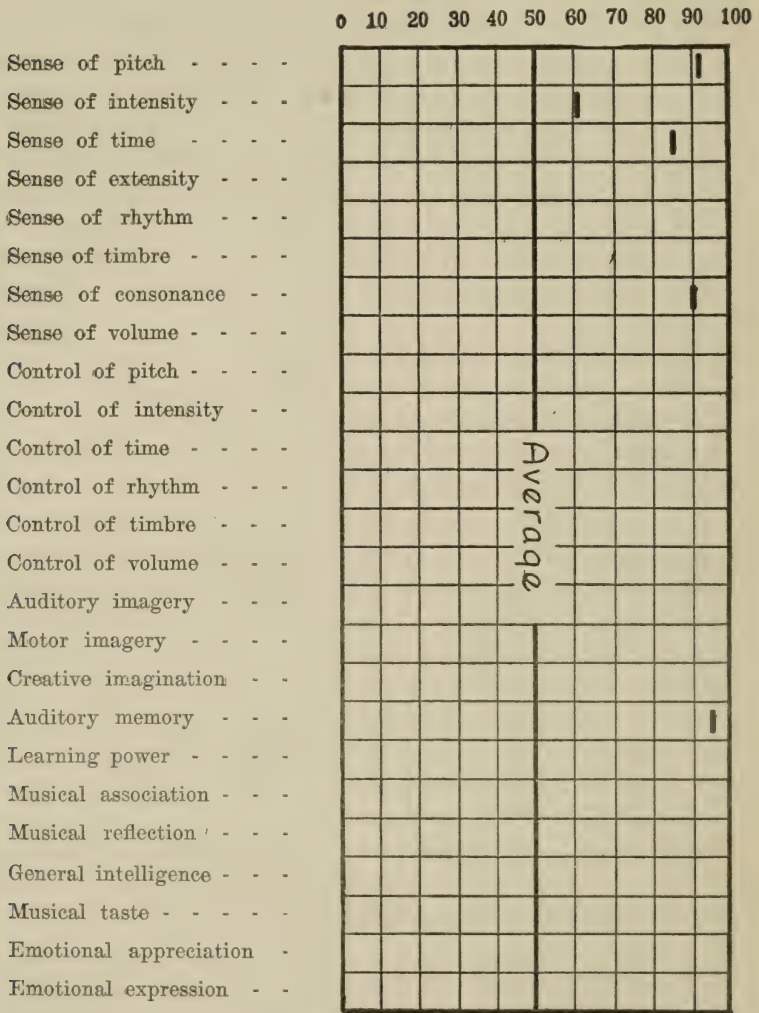
The Report. The data should be treated in the same manner that we treat records of achievement in other tests, such as arithmetic tests, spelling tests, or history tests; they should inform teacher, parent, and pupil of the existing situation, but they should not be made public.

Labor-Saving. Various devices may be used for labor-saving in the checking of records.* As routine work it should preferably be done right in the class-room by the pupil him-

* When large numbers of records are to be checked by the teacher, it will be found very convenient to take all of the records which have been made on the standard blank, make them into a pile and place on top of the pile a paper key made on the same blank. Then take a small nail and drive it through the whole pile of blanks in each of the blocks that have one of the two records, for instance, H in the H and L records for pitch. In this way all records are checked at the same time and all that is necessary is to count the mistakes.

Name -----

Date ----- Examiner -----



Observations, comments, and recommendations may be written on the back of this chart.

Fig. 3. MUSICAL TALENT CHART*

* In this case the record filled in is that of the first case in Table II.

self. The teacher will, of course, give each pupil his rank from the table in the *Manual of Instructions* on the basis of % right computed by the pupil with such help and scrutiny as may be necessary from the teacher. A blank chart on a card might well be mimeographed, or printed and supplied, so that the chart could be made out in duplicate, one for the teacher and one for the pupil. Fig. 3 shows a chart of this kind illustrating one record.

The Talent Chart. In order to visualize the records and present them in clear relief in relation to other talents it is recommended that the report of the children be given in the form of the talent chart herewith presented*

Such a chart is very quickly made and it has several advantages over the mere numerical record. It impresses the fact that the talents measured are only a few out of all that must be taken into account. It brings before all concerned a comprehensive analysis of talent in such a way as to stimulate interest and activity in the effort of securing information in every available way on the points left blank. It holds before the pupil and the teacher bases for systematic observation and definite goals for achievement. A neat chart like this, of personal interest, is likely to be preserved and, therefore, to be brought to attention from time to time. It helps to broaden the pupil's conception of what is involved in music.

Follow-up Work. Unless followed up in school and at home the record is of small avail. The main consideration here is a live teacher. In case of doubt the test should be verified out of school hours. The teachers should use the various devices practiced by good music teachers in testing ranks with reference to actual capacity in performing. Talented children who have been neglected should be provided for at public school expense or through volunteer service of individuals or organ-

* When the charts are required in large quantities for the school system a zinc etching may be made from this page for use in printing. Where it is not thought desirable to do this, or where only a small quantity are needed, they may be obtained at cost from the Librarian of the University of Iowa. The record blank, page 5 of the Manual of Instructions and Interpretations, printed on both sides, may be obtained in the same manner.

izations. Particular pains should be taken to corral all talented children into the approved musical organization of the school.

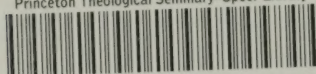
Community and Home Tests. These tests should be conducted frequently at community centers. Home circles should be encouraged to conduct "scientific musical entertainments." One evening should be devoted to each test. A hostess might perform a gracious service, not only by entertaining neighbors and friends, because the taking of the tests is a most interesting contest, but also by discovering and thereby encouraging talent. The records are no more expensive than ordinary phonograph records, but a single set might well be allowed to circulate from family to family. Children may well be allowed to play with them and test one another as often as they like so long as they pay due respect to the key to the right answers.

Training Value. A strong case might well be made for the use of these measures for the sake of their training value. Few tests so completely engross the interest of the child as these do, and they furnish fresh illustrative material in the use of which the child acquires habits of accuracy and alertness in observation.

Ultimately the Attitude of a Physician. To the question as to what tests we can use in diagnosing delinquency in children sent to our psychological clinic the writer had to reply. "We use no set tests; we take the attitude of the physician and use the best means at our command for diagnosing the situation." Such will be the attitude of the music teacher and the musical examiner of the future. All "sets" of tests are at best fragmentary. But a standardized series of tests, like this, constitutes the simplest and most effective means of approach for general use. In whatever way these may be supplemented in the future, the principles here involved will remain basic.

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